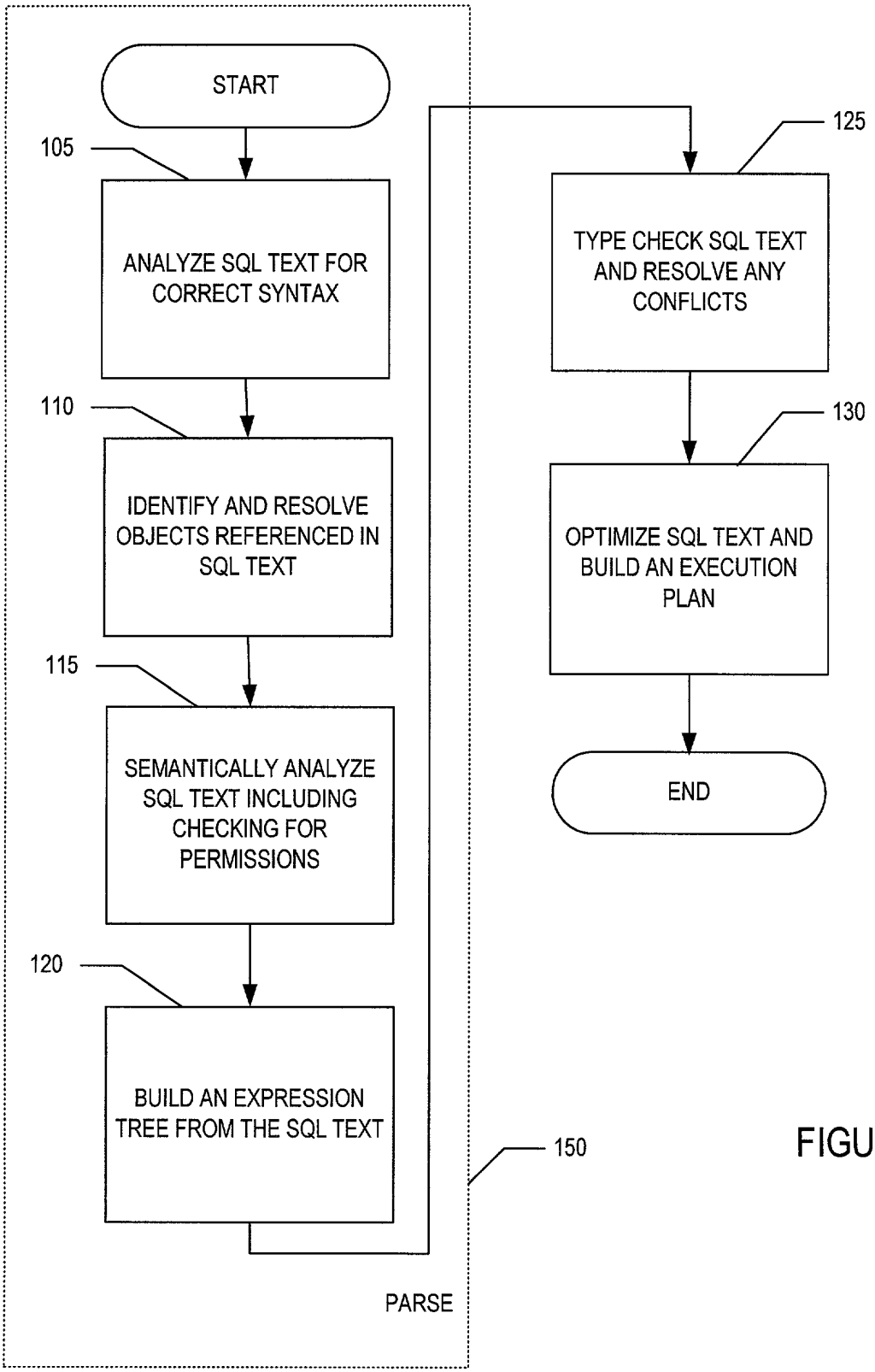

START
105
ANALYZE SQL TEXT FOR CORRECT SYNTAX
110
IDENTIFY AND RESOLVE OBJECTS REFERENCED IN SQL TEXT
115
SEMANTICALLY ANALYZE SQL TEXT INCLUDING CHECKING FOR PERMISSIONS
120
BUILD AN EXPRESSION TREE FROM THE SQL TEXT
150
PARSE
125
TYPE CHECK SQL TEXT AND RESOLVE ANY CONFLICTS
130
OPTIMIZE SQL TEXT AND BUILD AN EXECUTION PLAN
END

FIGURE 1

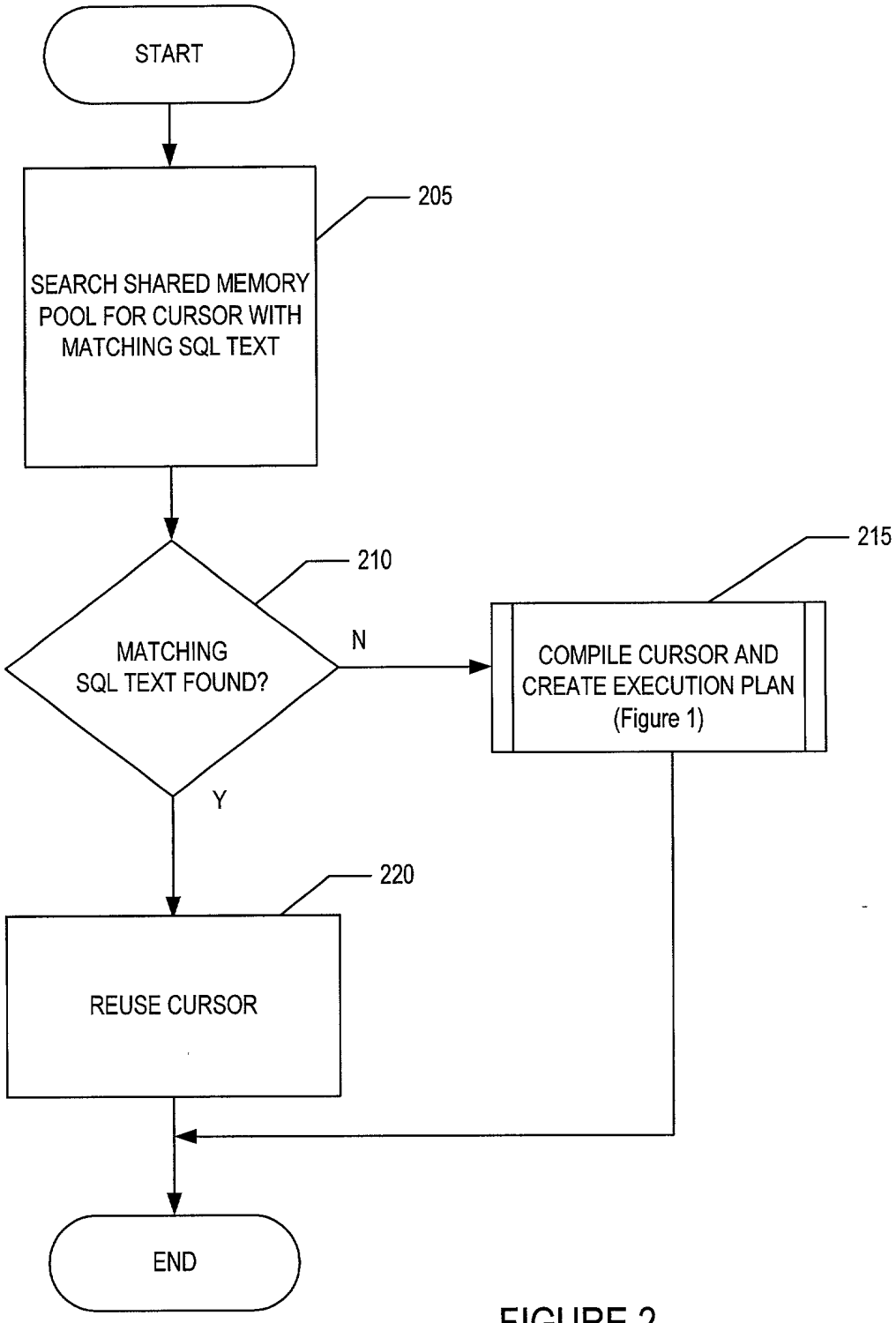

START
205
SEARCH SHARED MEMORY POOL FOR CURSOR WITH MATCHING SQL TEXT
210
MATCHING SQL TEXT FOUND?
N
215
COMPILE CURSOR AND CREATE EXECUTION PLAN (Figure 1)
Y
220
REUSE CURSOR
END

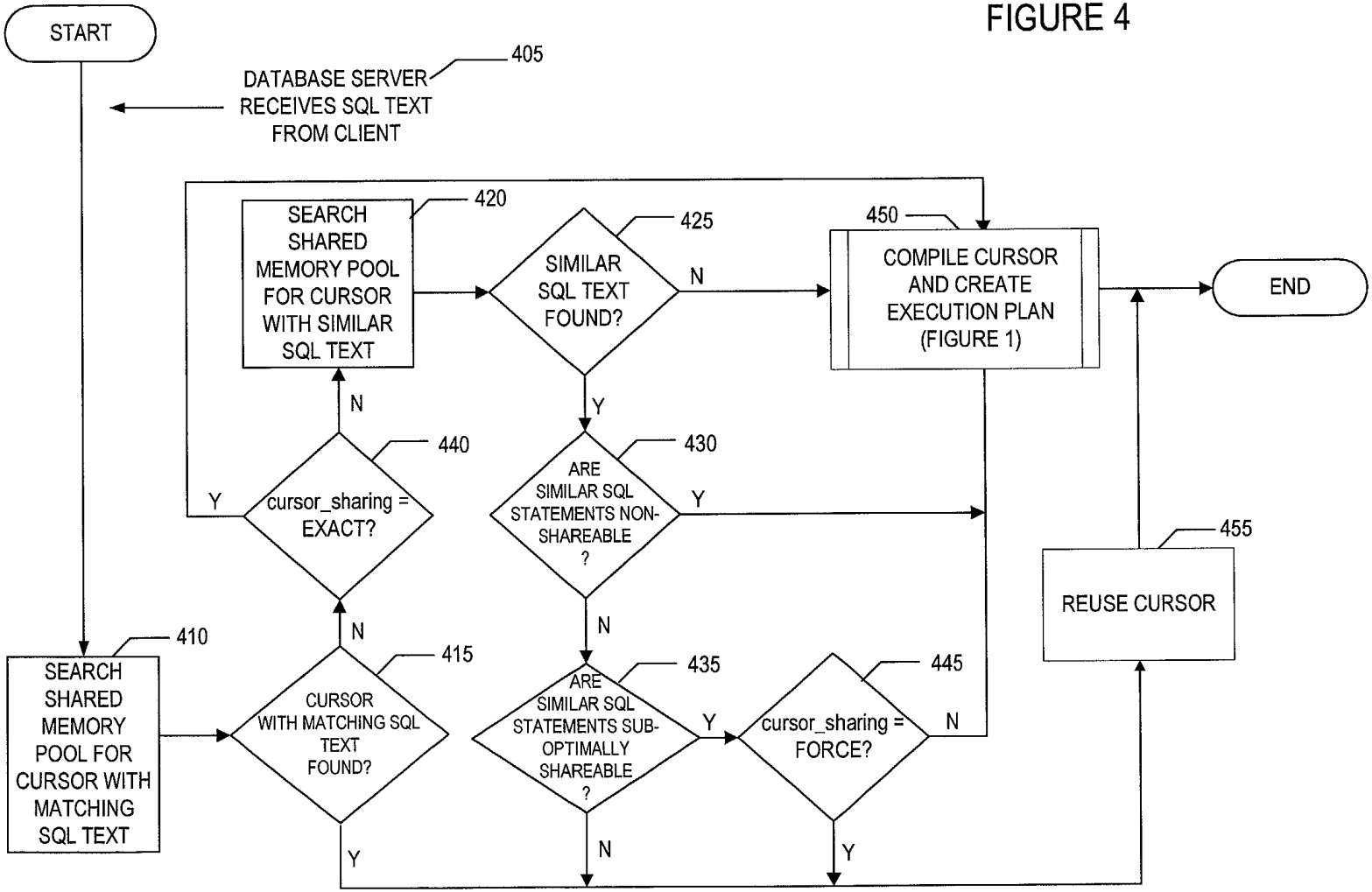
FIGURE 2

TABLE 1

SIMILAR SQL TEXT CATEGORY	PARAMETER VALUE	RESULT	SAMPLE STATEMENT PAIR
OPTIMALLY SHAREABLE	EXACT	COMPILE	1. INSERT INTO EMP_T VALUES (543, JOE, 32) 2. INSERT INTO EMP_T VALUES (297, SALLY, 45)
	SIMILAR	SHARE	
	FORCE	SHARE	
SUB-OPTIMALLY SHAREABLE	EXACT	COMPILE	3. SELECT * FROM EMP_T, DEPT_T WHERE (EMP_T.EMPLOYEE_ID<100) AND (EMP_T.ENAME=DEPT_T.ENAME). 4. SELECT * FROM EMP_T, DEPT_T WHERE (EMP_T.EMPLOYEE_ID<500) AND (EMP_T.ENAME=DEPT_T.ENAME).
	SIMILAR	COMPILE	
	FORCE	SHARE	
NON-SHAREABLE	EXACT	COMPILE	5. SELECT NAME, DOB FROM EMP_T ORDER BY 2 6. SELECT NAME, DOB FROM EMP_T ORDER BY 1
	SIMILAR	COMPILE	
	FORCE	COMPILE	

FIGURE 3

FIGURE 4


START
405
DATABASE SERVER RECEIVES SQL TEXT FROM CLIENT
420
SEARCH SHARED MEMORY POOL FOR CURSOR WITH SIMILAR SQL TEXT
425
SIMILAR SQL TEXT FOUND?
N
450
COMPILE CURSOR AND CREATE EXECUTION PLAN (FIGURE 1)
END
Y
N
440
cursor_sharing = EXACT?
Y
430
ARE SIMILAR SQL STATEMENTS NON-SHAREABLE ?
Y
455
REUSE CURSOR
N
410
SEARCH SHARED MEMORY POOL FOR CURSOR WITH MATCHING SQL TEXT
415
CURSOR WITH MATCHING SQL TEXT FOUND?
435
ARE SIMILAR SQL STATEMENTS SUB-OPTIMALLY SHAREABLE ?
Y
445
cursor_sharing = FORCE?
N
Y
N
Y

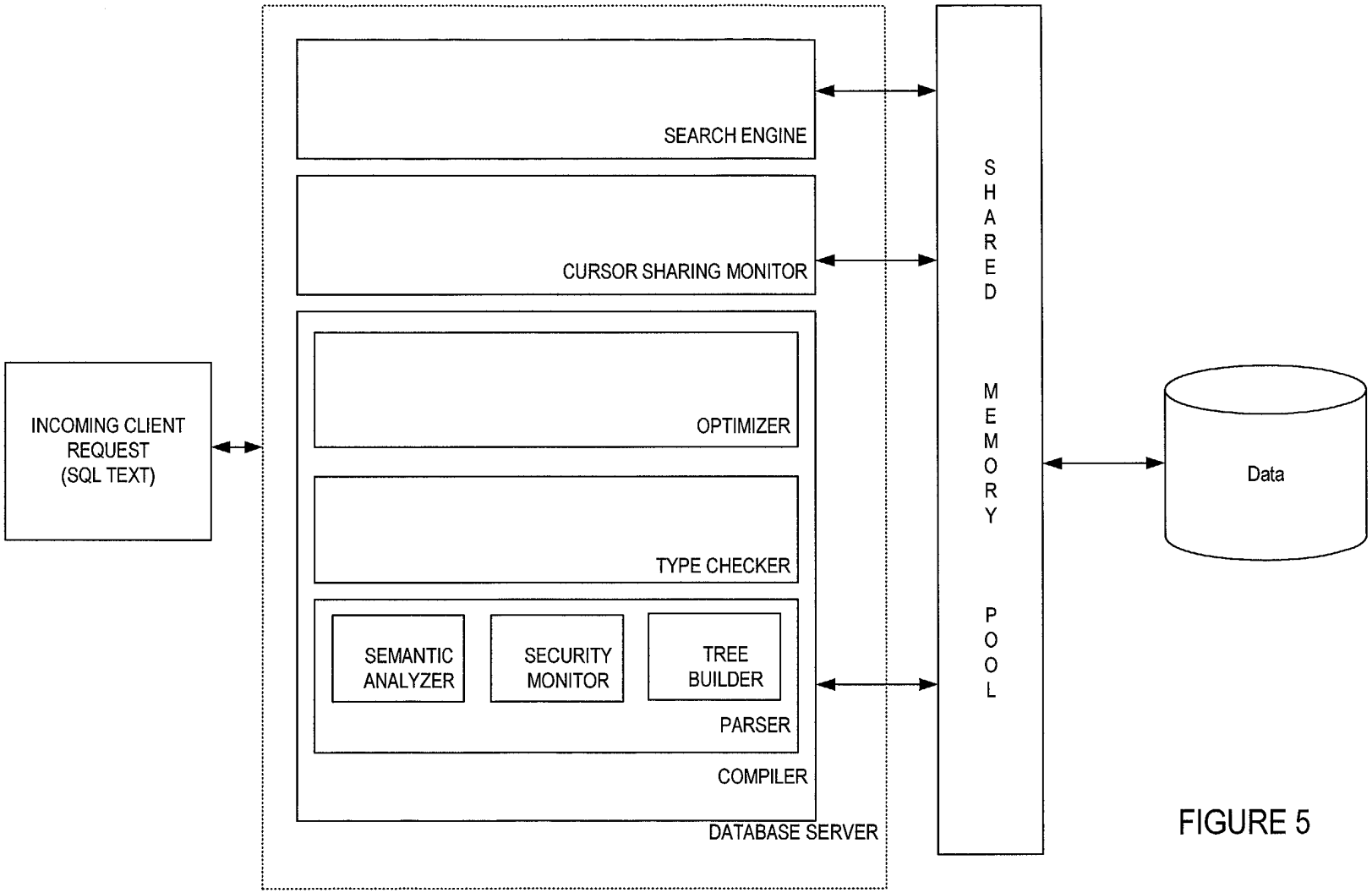

SEARCH ENGINE
CURSOR SHARING MONITOR
OPTIMIZER
TYPE CHECKER
SEMANTIC ANALYZER
SECURITY MONITOR
TREE BUILDER
PARSER
COMPILER
DATABASE SERVER
INCOMING CLIENT REQUEST (SQL TEXT)
SHARED MEMORY POOL
Data

FIGURE 5

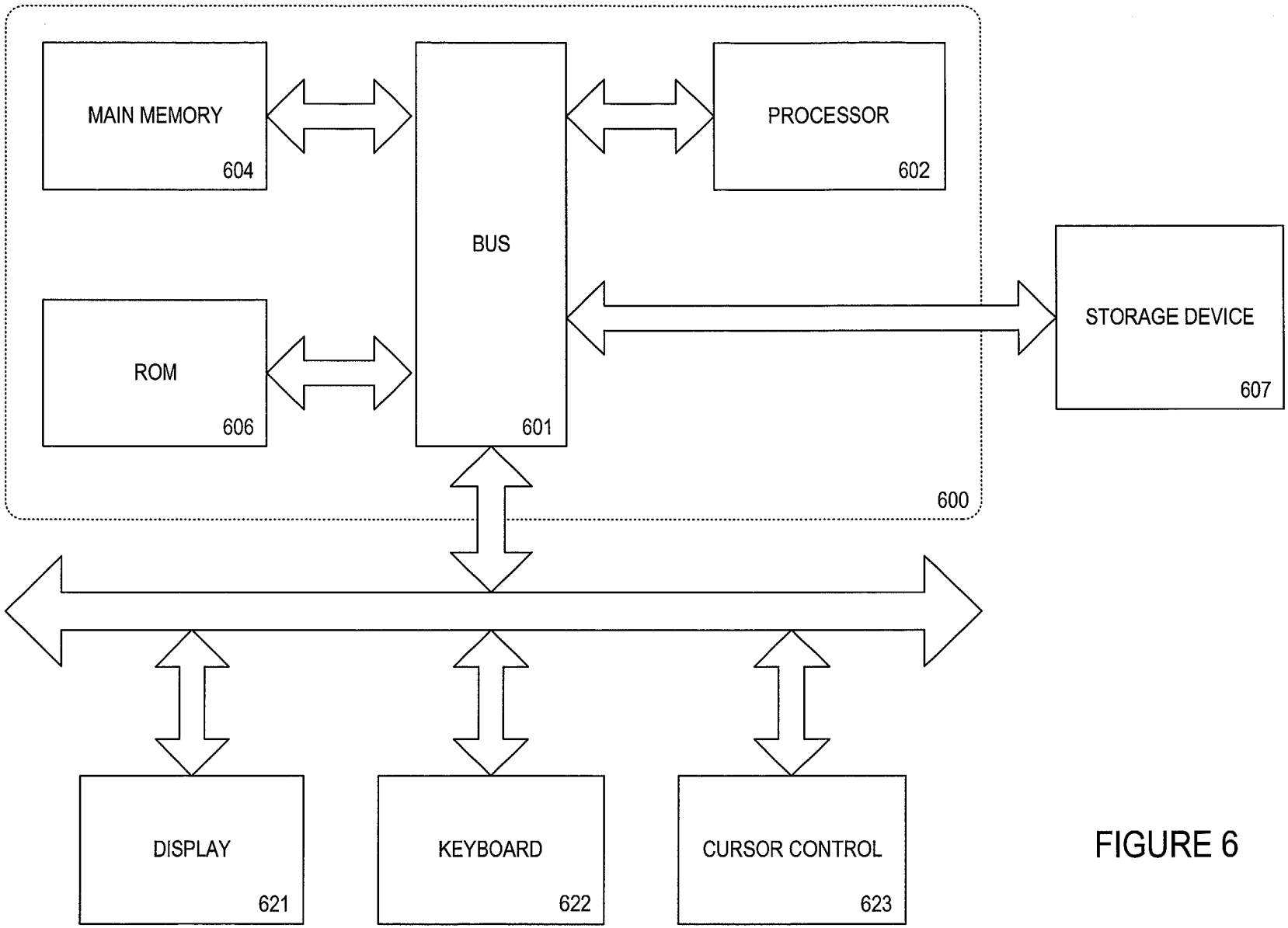

MAIN MEMORY
604
BUS
PROCESSOR
602
ROM
606
601
STORAGE DEVICE
607
600
DISPLAY
621
KEYBOARD
622
CURSOR CONTROL
623

FIGURE 6

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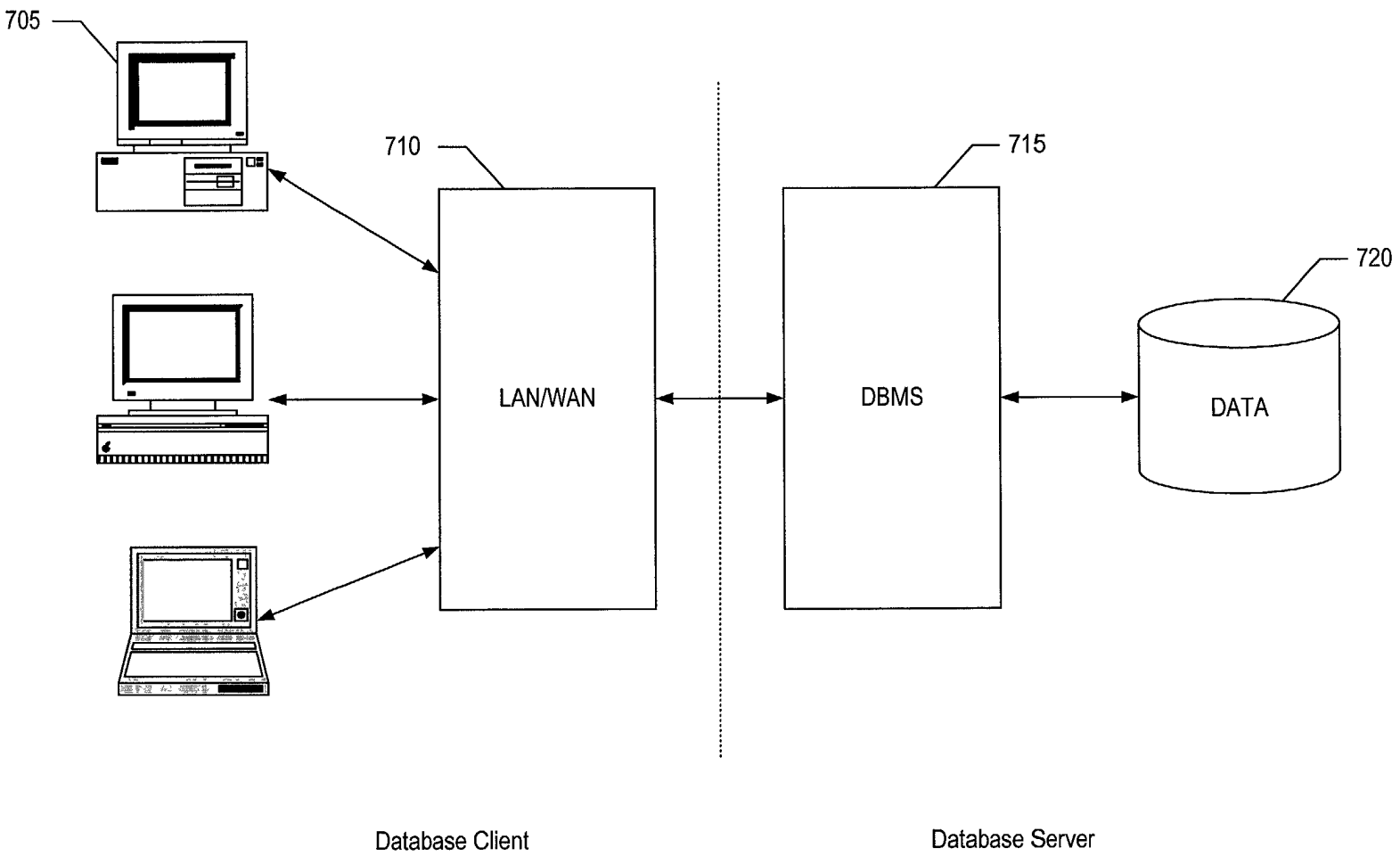

FIGURE 7